

B

Commonwealth of Massachusetts

ANNUAL REPORT

OF THE

Commissioner of Conservation

AND

State Forester

FOR THE

YEAR ENDING NOVEMBER 30, 1928

Mass. DEPARTMENT OF CONSERVATION

PUBLICATION OF THIS DOCUMENT APPROVED BY THE COMMISSION ON ADMINISTRATION
AND FINANCE

1117 23 1893

STATE HOUSE, BOSTON

Mass. Officer

OUTLINE OF REPORT

This report is divided for convenience and economy into four parts:—

- Part I. The organization and general work of the Department of Conservation.
- Part II. The work of the Division of Forestry.
- Part III. The work of the Division of Fisheries and Game.
- Part IV. The work of the Division of Animal Industry.

Parts I and II are printed in one volume as Public Document No. 73.

Part III is printed in a separate volume as Public Document No. 25.

Part IV is printed in a separate volume as Public Document No. 98.

1925
1928

The Commonwealth of Massachusetts

Part I.

ANNUAL REPORT OF THE COMMISSIONER OF CONSERVATION

The annual report of the Department of Conservation is herewith submitted. During the past year meetings of the Commissioner and Directors were held as usual at which policies of the department and matters connected with the divisions were discussed. The records of these meetings are on file in the office.

In early May Mr. Frank B. Cummings, Director of the Division of Animal Industry, resigned, his resignation to take effect on June 1, and the governor appointed Mr. Evan F. Richardson of Millis to fill the vacancy. Mr. Richardson is well qualified to hold this position by practical knowledge and by experience.

The department has done much cooperative work with the Federal Government, and also with the state departments of Agriculture, Health and Public Works.

A special committee to consider and report on the shellfish situation was appointed in accordance with Chapter 44 of the Acts of 1928, of which Senator Donald W. Nicholson was chairman.

The chief forester and the forester in western Massachusetts have spent considerable time in locating land and advising the chairman of the Department of Conservation of the Daughters of the American Revolution in regard to acquiring a D. A. R. Forest. The project includes the acquisition of this land and the turning of it over to the state for management.

FOREST CONSERVATION.

It is the duty of the state forester to promote the perpetuation, extension and proper management of the public and private lands of the commonwealth. In the pursuance of this duty, the state forester and his assistants interview land owners, give advice in planting, sell trees for reforestation, acquire lands for state forests and plant and care for these forests, and protect the woodlands from forest fires. There is also a large amount of educational work done, in lecturing, organizing and teaching young people, encouraging granges, women's clubs and other like organizations to take an interest in forestry.

Special seasons set apart by the President and the Governor for intensive forestry work or forest fire prevention help in this wise propaganda, and the teachers in the public schools cooperate at such times.

Anything that calls attention to the need for increasing our forest growth is welcomed. For with the passing of years, our timber supply in Massachusetts has been so depleted that we can no longer supply our wood-using industries, and timber for building is imported, or else another form of construction used. A heavy growth of trees is advisable for other reasons than timber supply, also. We must remember our brooks, rivers and ponds, which the surrounding forest growth helps to fill. For water supply, power and drainage we must keep the water sheds well covered with forest trees.

And neither should we neglect the aesthetic side of the forest situation. Bare pasture lands and old fields can be made to grow forests, where in a few years will be sport, recreation and solitude. Berries will grow, birds will sing and hikers and campers will have an abundance of country suited to their purpose. In these days of large, congested communities, the space and freedom of these wooded areas has become a necessity for health and efficiency.

INSECT DEPREDACTIONS.

Although the only insects with which this department is legally concerned are the gypsy moth and brown-tail moth, the prevalence of other insects is of interest to all who have to do with trees, forest, orchard and shade.

The gypsy moth, particularly, has given us great concern during the past four years. Though we have called attention in our reports each year to the increasing numbers of this insect, in fact in our report of the year 1924, we advised against a feeling of false security in regard to it, yet conditions have rapidly grown worse.

In Governor Fuller's budget recommendations for the year 1925, he said, "May I also call your attention to the gypsy and brown-tail moth laws. These

were passed at a time when this pest was rapidly spreading and constituted a menace of state-wide concern. Now, owing to parasites and other causes, the special emergency to meet which these laws were framed, no longer exists. The problem has become one which each community can handle according to its needs." This statement had a state-wide effect on communities; many felt that they no longer needed to appropriate any money for suppressing the gypsy moth if the attitude of the state was to be that expressed by the Governor. Much pressure had to be put into the work of urging towns to appropriate the necessary money and the demonstration given by the rapid increase of moths during the following seasons has at last resulted in making the problem again resume its proper place in the towns' budgets.

The appropriations cut down at that time, and the continuing feeling that it was unnecessary to spend much money on this work, the readiness of the municipalities to follow the example of the state, have all contributed to the present condition of affairs.

The satin moth has been very destructive to poplar and willow, and the oriental hag moth has again made its appearance in large numbers in Boston and vicinity. In the last two years, the last named insect has spread from Boston to a number of cities and towns within a radius of ten miles.

Last summer the white pine weevil was very noticeable on white pine throughout the state, it being particularly bad in eastern and southern Massachusetts. Information regarding methods of combating these insects was given by this department, whenever requested.

CONSERVATION OF THE HEALTH OF DOMESTIC ANIMALS.

The Division of Animal Industry has charge of the control, prevention and suppression of contagious diseases in domestic animals.

Over three thousand dogs were reported during the year, because of having bitten persons, because they show symptoms of rabies, or because they had been in contact with rabid animals. The number of positive cases of rabies has increased from 797 in 1927 to 862 in 1928. Much of the danger of this dread disease could be eliminated if the local authorities would enforce the present laws in handling the stray and unlicensed dog.

The prevention of hog cholera demands an expenditure of upwards of \$30,000 and nearly one hundred thousand treatments are given yearly.

The live stock market at Brighton is the only market of its kind in the United States dealing with dairy cattle. Considerable time and attention has been given to this branch of our service, resulting in improved conditions.

The increased indemnity paid to farmers for cattle reacting to the tuberculin test is to commence December 1st, and this increase, with the awakened interest all over the State in reference to this work, has persuaded many farmers to file requests to place their herds under State and Federal supervision. The regulations to the sale of milk have also been a strong factor in this movement, and before another year expires, Massachusetts will have made a rapid stride forward in this work.

CONSERVATION OF WILD LIFE.

Any plan for the adequate protection of wild life must cover a period of years. The objectives of the Division of Fisheries and Game were laid down some years ago and are being approached as rapidly as appropriations will permit. These consist largely in developing existing game farms and fish hatcheries to their maximum production before the establishment of additional plants. This involves putting all buildings, pens and pools into first-class physical condition; a development of our facilities for the production of pond fish (as distinguished from those species which we can artificially propagate) on a financial scale comparable to the cost of operating our fish hatcheries; the enlargement of our units to carry on salvage operations to meet all of the requirements of a given year; increasing attention to the breeding of our native game birds as distinguished from foreign species (particularly our native Bob-White quail); the production of our native fish instead of the introduction of foreign species; the importa-

tion of such animals as are native to our own covers (as, for example, the white hare); and research and study into diseases of all species of wild animal life.

The protection to the wild life stock is first to be supplied by the maintenance of an adequate force of wardens, suitably uniformed and equipped. The primary work of law enforcement is to be supplemented by a more systematic reduction to a harmless minimum of predatory species; the establishment of permanent wild life sanctuaries owned and operated by the state; persistent education of the public to an interest and appreciation of the wild life, and restrained, conservative exploitation of the same.

The foregoing program cannot be realized in one year, or a decade; but so long as the major objectives are kept always in view and the annual advancement based on sound business practices, we will come nearer to passing along to future generations an adequate stock of desirable wild life than can ever result from changing of policies and constant shifting of objectives.

The Division of Fisheries and Game, during the past year, has functioned along the above lines. Much has been done in the consolidation of gains of past years to make them permanent. Some additions have been made to the game farms and fish hatcheries; our pond cultural and salvage operations have broadened out; and there have been permanent additions made to both the inland and coastal warden service. While the enlargement of permanent wild life sanctuaries has been extremely slow, nevertheless some progress was made during the year.

STANDISH MONUMENT RESERVATION.

During the summer of 1928, 108,585 persons visited the reservation. These visitors came from every state and territory in the union, and more foreign countries were represented than ever before especially the number of visitors from Mexico and South America was unusually large. The number of persons ascending the tower was 7,271.

In the spring of 1928, the legislature made provision for the erection of a comfort station on the grounds near the tower, appropriating the sum of \$3,000. for this much needed improvement. This building has been built at a cost of \$2,983.51. The construction is of concrete blocks, stuccoed inside and outside. All the work, including the plumbing, has been done by our own employees. This comfort station was much needed on account of the very large number of visitors to this historic spot.

The repairs on the statue of Myles Standish, which was injured in the electric storm of August 26, 1922, have not yet been completed owing to lack of funds. It is hoped that the legislature of 1929 will make available the sum necessary to rebuild the lower part of the statue and restore the completed statue to its place.

STATE FORESTS.

During the year 1928 only four lots of land were paid for by this department. These lots were all part of forests of which takings have been made, so that no increase to the total holdings was made by these transactions.

The list of lots is as follows:

<i>Name of Forest</i>	<i>Acres</i>
Marthas Vineyard	338.
Shawme	16.52
Total	354.52

RECOMMENDATIONS.

Recommendations for legislation regarding the Division of Fisheries and Game will be found in the annual report of the Division of Fisheries and Game.

PART II

REPORT OF THE DIVISION OF FORESTRY

The work of the Forestry Division has been carried on as usual, the work of advice and assistance to the public in tree planting and forest management progressing well. The forest extension work, partially financed by the Federal Government, is broadening its scope and is helping to promote forestry interest, especially among the young generation.

ORGANIZATION.

WILLIAM A. L. BAZELEY, Commissioner and State Forester

CHARLES O. BAILEY, Secretary

HAROLD O. COOK, Chief Forester

D. C. A. GALARNEAU, Forester in Western Massachusetts

FRANK L. HAYNES, Forester, Land Purchase and Surveys

JAMES MORRIS, Forester, Nurseries

ROBERT B. PARMENTER, Assistant Forester, Reforestation and Extension Work

MAXWELL C. HUTCHINS, State Fire Warden

GEORGE A. SMITH, Chief Moth Suppressor

JOHN P. CROWE, Supervising Fire Warden

District Fire Wardens

1. James E. Moloy, Woburn
2. John H. Montle, Fall River
3. William Day, Wareham
4. Charles L. Woodman, Manchaug
5. Albert R. Ordway, Westfield
6. Joseph L. Peabody, Winchendon
7. Verne J. Fitzroy, Shelburne Falls
8. Lincoln Crowell, Sandwich

District Moth Suppressors

1. Michael H. Donovan, Beverly
2. Charles E. Mace, Bolton
3. John J. Fitzgerald, Haverhill
4. Clarence W. Parkhurst, Foxboro
5. Walter F. Holmes, Buzzards Bay
6. Harry B. Ramsay, Worcester
7. Grover C. Twiss, Holyoke

WOODLOT EXAMINATIONS.

We have always found that the system of meeting the woodland owners on their land and advising them as to the proper treatment of their woodlots is a very satisfactory procedure both for the department and for the owner. We average from sixty to seventy-five such requests each year. The number this year constitutes a record. It is interesting to note the number of people who have requested examinations on account of insects or diseases threatening their stands of timber. In fact most of the examinations of single, ornamental trees were brought about by the same sort of interest. As is usual, those who seek advice on forest planting head the list.

<i>Problem</i>	<i>No.</i>	<i>No. Acres</i>
Improvement Cutting	18	1,185
Insects and Diseases	13	345
Planting	29	3,050
Marketing	10	1,385
Fire Damage	1	30
Ornamental Trees	17	
Taxation	2	260
	<hr/> 90	<hr/> 6,255

EXHIBITS.

The department had its usual large exhibit at the Eastern States Exposition at Springfield and placed small exhibits at the New Ocean House, Swampscott, for the State Federation of Women's Clubs; at the Underwood School in Newton and Newton High School.

The stereomograph picture machine was loaned to several organizations, and the Children's Museums of Boston and Cambridge reported that it had great educational value.

LECTURES.

Such requests as have come to us for speakers from granges, women's clubs, luncheon clubs, and kindred organizations have been honored by the department and during the past year various members of our staff lectured before sixty-five organizations in all.

The following meetings outside of the state were attended by representatives of the department: American Fish and Game Protective Association, New York City; Association of State Foresters, Wooster, Ohio; New England Section of Foresters, Keene, New Hampshire.

FOREST SURVEY.

The forest survey which this department has been making over a period of years was continued this summer by the mapping of Bristol County. Only Dukes and Nantucket Counties remain to be mapped. The survey this year was in charge of R. Milton Hick, one of our surveyors, who had two temporary assistants.

STATE PLANTATIONS.

The policy of taking over private lands, planting them, and then allowing the owners to redeem them within ten years according to the terms of the reforestation law, has been given up because when such lots were not taken back by the owners, they became the property of the Commonwealth, and as a result, the department was coming into possession of a lot of scattered small plantations, difficult to care for. Where these state-owned plantations are near existing state forests, they have been combined with them for convenience of administration. Where they cannot be so combined, they are called state plantations. The work done on the first class of lots is included under state forests.

Hardy—Ashburnham	. . . . .	Planted 10,000 trees.
Brewster—Plymouth	. . . . .	Planted 30,000 trees.
Harrington—Ashburnham	. . . . .	Release cut 25 acres.
Robertson—Barre	. . . . .	Release cut 20 acres.
Civic League—Nantucket	. . . . .	Plowed fire line.
Flint—Andover	. . . . .	Planted 1,000 pines.
Peckens—Ashburnham	. . . . .	Release cut 20 acres.

NURSERIES.

The outstanding feature of our nursery work during 1928 was the breaking and clearing of an additional six acres of land at the new Clinton Nursery. As a result, beginning next spring, we hope to produce even better stock because for the first time in several years we have sufficient land to properly fertilize and revitalize areas from which stock has been removed. For several years past, we have been obliged to reset stock immediately in soil from which trees for current shipment had been taken. We shall continue to break land at Clinton until we have approximately twenty acres available for tree production.

The state forest nurseries at Savoy and October Mountain have served their purpose and have been discontinued.

We now have sales nurseries at Amherst, Winchendon, Clinton, Bridgewater, and Barnstable. Our state forest nurseries are located at Swann Forest, near Great Barrington; Erving Forest, at Erving; Myles Standish Forest, at South Carver; and Shawme Forest, on the Sandwich-Mashpee Road.

During the spring we shipped over three million trees from the combined nurseries. This stock was distributed as follows:

Sale	. . . . .	1,499,000
State Forests	. . . . .	819,000
Town Forests	. . . . .	242,000
State Institutions	. . . . .	576,000
Reforestation Lots	. . . . .	40,000
		<hr/>
		3,176,000

Because of difficulty in classifying the age of various stocks we have not included our fall shipments in the above total. Such shipments will be listed in next spring's totals.

White pine weevil, hitherto considered, more or less of a periodic pest, has been prevalent in great quantities over Massachusetts for the past five years. The life habits of this pest are being studied closely with a view towards determining the best economic methods of extermination.

Red pine is not attacked seriously by this weevil and since we have a fairly large quantity of this stock both in three and four year classes, we recommend that prospective purchasers take advantage of this opportunity to secure this species for planting in either pure or mixed stands.

Experiments are being conducted at Amherst Nursery to determine the effect of different fertilizers on nursery stock.

The total content of all nurseries is at present about 17,000,000 trees embracing white pine, red pine, Scotch pine, Norway spruce and white spruce. These species are variously suited to conditions in Massachusetts.

WHITE PINE BLISTER RUST.

The Massachusetts Department of Agriculture in co-operation with the United States Department of Agriculture is conducting an intensive campaign to prevent the spread of the white pine blister rust in the state. During the fiscal year 1928, control work was performed on 239,033 acres of land. In this work 521,360 wild and 31,815 cultivated currant and gooseberry bushes were uprooted as a protection to nearby white pines. The disease was very much in evidence on the leaves of currant and gooseberry bushes during the summer, due undoubtedly to the prevalence of unusually moist conditions. To date (November 30, 1928) the disease has been reported on white pine in 279 of the 355 cities and towns in the Commonwealth.

EXTENSION FORESTRY.

During the past year extension forestry in this state has progressed very favorably and more progress has been shown than in the past two years. A great many lectures have been given, demonstrations held and three or four tours have been carried out, all of which have shown results. During 1928 the extension forester with the county agents, established many demonstration plots at which meetings have been held. A great deal of profitable discussion was started and the result has been that more work on woodlots has been done than ever before, both thinning and liberation cutting. Our policy is to encourage the making of Christmas tree plantations and new ones are being started. Scout organizations and camp carried out, all of which have shown results. During 1928 the extension forester, has laid out a definite plan of work for the counties with a goal towards which to strive and in each case the goal has been approached but not reached.

The work is divided naturally into three classes:

1. Thinning of young and immature stands to increase and speed up their growth and at the same time pruning some of the better trees for good quality lumber.

2. Liberation or release cutting.

3. Planting.

Three counties were chosen in which to start the work rather than to try to spread the work too thin over the entire state. The thinning problem was undertaken in Worcester County with the following practices recommended:

(a) Cut poor trees such as:

1. Crooked trees.
2. Knotty trees.
3. Forked trees.
4. Dead or dying trees.
5. Decayed trees.
6. Slow-growing trees.
7. Trees, even good ones where they are too thick.

(b) Leave good trees such as:

1. Tall, straight trees.
2. Well shaped trees.
3. Good timber trees.

4. Fast-growing trees.
5. Leave enough trees per acre.
6. Sound trees.

(c) Then you will have:

1. Plenty of firewood.
2. Good quality lumber.
3. Fence posts, ties and poles.
4. Lumber for use on the farm.

The methods used to teach the thinning problem were as follows:

1. News articles informing people what the project will accomplish.
2. Visit the county agent, securing a list of prospects.
3. Make personal visits to the prospects with the county agent.
4. Meet with local leaders and community leaders, discussing the situation, need of work and what means we are to employ to accomplish the desired results.
5. Send circular letters to the prospects, giving information and helpful direction.
6. Visit the county agent to line up demonstrations.
7. New notes on demonstrations as to time and place.
8. Send circular letters to prospect list, giving schedule of demonstrations.
9. Enroll members at the demonstrations.
10. Follow up leads obtained at the demonstrations.
11. News items on lectures before communities.
12. Lectures before communities.
13. Set up window displays and exhibits, etc.
14. Check up the results.

In Middlesex County the project was liberation or release cutting. Although this liberation or release cutting problem was the major one undertaken in Middlesex County, nevertheless, pruning, thinning and planting were not overlooked and if, as it turned out to be the case, the project was thinning, the methods of teaching were to:—

1. Meet with county agent and obtain a list of prospects.
2. Write pertinent news articles regarding the project for publication in the county farm paper and local newspaper.
3. Make personal visits with the agent to influential prospects in a community.
4. Establish demonstration plots on land owned by these influential prospects.
5. Send out news notes regarding demonstration trip to be held in the near future.
6. Hold demonstration trip with follow-up cards to enroll members.
7. News notes on the result of the trip.
8. Give lectures to granges, community meetings and other organizations.
9. Set up window displays, exhibits, etc.
10. Send circular letters to prospects and co-operators, giving them new methods of farm woodlot improvement.
11. Make farm visits either with or without the agent.
12. Check up on the results.

Barnstable County was chosen as a likely field for establishing the planting project, but after the project had been submitted to the *trustees of the county and voted down, the extension forester spread the work over the two counties already mentioned. The directors felt that unless there was an explicit call for this line of work, it would be better for them to expend their time and money on projects that were called for.

In support of the thinning project the extension forester sent out a series of six letters giving methods of woodlot improvement, kinds of trees to take out, information in regard to a demonstration woodlot that was thinned in Ashby, with the results obtained, and also a letter in regard to the timber tax.

In support of the liberation cutting project, a series of four letters were sent

* Trustees for County Aid in Agriculture.

out telling the reader just how it would be possible for him to improve the sprout woodlot which he owns.

In the outline showing methods of teaching the thinning project, mention was made of establishing demonstration plots on woodland owned by influential members of a community. With this idea in mind the county agent and the extension forester established three in Middlesex County and one in Plymouth County. The first one was established in Ashby. The owner was willing to cooperate with us and we marked the trees to be taken out on one-quarter acre. He had them cut and piled and kept the figures of the cost. Within a few weeks following this, we held a meeting and discussed the possibilities and probabilities of others obtaining the same result if they put into practice the methods which they learned at this meeting.

The next plot was established in Pepperell where a five-acre place of 17-year-old white pine was located and with the owner's permission we thinned and pruned one-quarter acre which later was increased to one-half acre. Two meetings were held demonstrating the advisability of thinning and how to improve the looks of the lot. At the same time we pruned a few of the outstanding trees for better quality lumber. The result in this case has been that the owner has gone over practically the entire five acres, taken out about seven cords of wood and knocked the limbs off the remaining trees. He is intending to go in again to do further thinning, and the cost of this has been only \$40. The third demonstration plot was established in Tyngsborough. Here one-quarter acre was laid off, some birch, dead pine, crooked, deformed trees and others showing poor growth, were removed, and some of the remaining ones pruned to a height of 16 feet. One-quarter acre adjoining was laid off as a check plot and measurements on both plots taken for further study. Two demonstrations have been held on this plot and these have already led to other individuals doing much the same on their own woodlots.

On the plot in Hanover the county agent, the blister rust agent and the extension forester removed all of the trees that were dead, dying and of poor shape, leaving those that were best at the time. We then pruned a few to a height of 16 feet and placed a sign at either approach, calling the attention of the passers-by to the work. A great many favorable comments have been the result. (With the list of prospective woodland co-operators at hand, together with requests from other sources, work has already been done in the following counties, carrying on work as specified:

PLYMOUTH COUNTY.

Town	Farm Visit	Tour	Lecture Attendance	Scout Camps	4H Club	Demonstration
Norwell . . .	2	..	35	..	4	Thinning
Hanover . . .	1	1	..	..	..	Thinning
Middleboro . . .	..	..	..	..	..	Thinning
Bridgewater . . .	..	1	..	..	..
Rochester . . .	..	1	..	..	..
Lakeville . . .	..	1	..	6	..	
Plymouth . . .	1	..	..	..	..
So. Duxbury . . .	1	..	..	..	..
Kingston . . .	1	..	..	..	..
Hanover . . .	..	..	..	..	..	Pruning
Hingham . . .	1	..	..	..	..

MIDDLESEX COUNTY.

Carlisle . . .	1	..	..	..	..
Pepperell . . .	2	..	..	..	..	12
Chelmsford . . .	2	..	..	..	..
Dracut . . .	1	..	..	..	3	15
Ashby . . .	2	..	..	..	1	
Lincoln . . .	1	..	..	..	..
Wilmington . . .	2	..	..	..	..
Tyngsboro . . .	1	..	15	..	..	12

<i>Town</i>	<i>Farm Visit</i>	<i>Tour</i>	<i>Lecture Attendance</i>	<i>Scout Camps</i>	<i>4H Club</i>	<i>Demonstration</i>
Ashby	1	..	..	..	..
Marlboro	1	..	..	..	..
Acton	2	..	..	..	..
Townsend	6	..	60	..	..
Natick	1	..	..	..	..
Hopkinton . . . .	..	..	..	..	1	
Concord	2	..	..	..	..
Sherborn	2	..	..	..	..
Groton	3	..	..	..	..
Waltham . . . .	..	..	..	..	..	20
Dunstable	2	..	..	..	..
Billerica . . . .	..	..	40	..	1	
Sudbury . . . .	..	..	..	..	..

ESSEX COUNTY.

Middleton	1	..	1	..	..
Georgetown . . . .	..	..	..	5	..	
Newburyport . . . .	..	..	..	5	..	
Newbury . . . .	..	..	..	4	..	
Boxford	1	..	..	1	..	
Haverhill	1	..	..	..	..
Amesbury	1	..	..	..	..
Methuen . . . .	..	..	..	4	..	
Andover	2	..	..	3	..	

NORFOLK COUNTY.

Walpole	1	..	..	..	..
Wellesley . . . .	..	..	65	..	..
Millis . . . .	..	..	35 G.S.	..	..
Medfield	1	..	..	..	..
East Weymouth . . . .	..	..	..	..	1	
Needham . . . .	..	..	..	..	2	
Cohasset	1	..	..	..	..

BRISTOL COUNTY.

Segreganset	1	..	60	..	..
Raynham	1	..	..	..	..
Dighton	1	..	..	..	..

HAMPSHIRE COUNTY.

Northampton	Called on county agent					
Plainfield . . . .	..	..	20	..	..
Enfield . . . .	..	..	..	..	1 Camp	

WORCESTER COUNTY.

Bolton	2	..	..	..	..	15
Harvard	1	..	..	..	..
Boylston	1	..	..	..	..
Westboro	1	..	..	..	..
Holden . . . .	..	..	115 (2)	..	..
Barre	1	..	..	..	..
Westminster	1	..	..	..	..
Athol	1	..	..	..	..
Southbridge	1	..	..	..	..
Phillipston	1	..	..	..	..
Dudley	1	..	..	..	..
Charlton	1	..	..	..	..
Leominster	1	..	..	..	..
Sturbridge . . . .	..	..	50	..	..
Hudson . . . .	..	..	25	..	..
Sterling	1	..	..	..	..	2
Lunenburg	1	..	..	..	..
Baldwinville . . . .	..	..	100	..	..
Sutton	1	..	..	..	..

The extension forester spoke over the radio on January 9, discussing phases of forestry in question and answer form, met county agents of Barnstable County and Berkshire County, explained work that he wished to carry on in those counties, spoke at the Y. M. C. A. here in Boston to the boy scouts, with 25 present. He attended a conference in New Haven where the forestry program of Connecticut was discussed, set up window displays in Worcester and Marlboro, set up an exhibit in Swampscott at the annual meeting of the Federation of Women's Clubs, attended a saw mill demonstration at Suncook, N. H., spending three days at a private boys' camp on Mashpee Island, Buzzards Bay; met the club agents in Great Barrington on a woodlot, explaining the forestry project which they could carry out in their own counties. This woodlot on which the meeting was held had been properly thinned and pruned so it was a very good plot on which to demonstrate his work. He made a trip to Brunswick, Maine, with Austin Cary in order to see pruning on his woodland and obtain from him figures which might be used to further our own work. He arranged an exhibit for Ashby and Acton fairs and set up a 4H exhibit at the Brockton Fair which consisted of a Christmas tree plantation, a panel from Washington, illustrating five rules for campers and all of the sample boards which had been made by the forestry clubs in Essex County, and set up a forestry exhibit in Newton.

During December two saw mill meetings were held, one at H. E. Buck's mill in West Sterling and the other at Sherburne Brother mill in Tyngsboro. At each mill the extension forester had five small logs ranging from five to six inches in diameter, five medium logs, ranging from eight to ten, and five larger logs ranging from thirteen to eighteen inches in diameter, run through the saw. The time it took to saw each log was noted, although the five small logs were kept as one. The lumber was scaled by a representative mill-man and graded at the same time, so that the quality of lumber cut could be ascertained. By keeping track of the time it took to saw the logs and the quality of lumber and the money obtained for the same, we were able to get a result which showed very conclusively that it took three or four times as long to cut 1,000 feet of small logs as it would to cut a thousand feet of large logs and also that the amount of money obtained for the lumber cut was of insufficient amount to make it worth while for a man to cut small logs from his own woodlot and haul them to the mill. It was also shown that the mill men could not afford to cut the small logs. The quality, cubical content and value of the lumber cut is increased three or four times if the tree is allowed to grow to double its size on the lot before cutting. Knowing this the owner of a woodlot must surely consider that cutting his stumpage on a rotation basis is the only proper way to handle it.

The extension forestry project seems to have taken a good foothold and woodland owners are beginning to feel that they have something which should be given more attention than it has been in the past. In the past the woodlots were considered a mine which could be visited whenever the need for forest products arose, but no consideration was given to the future. They have been satisfied in the past to allow nature to give them whatever crop she desired, but they are now fully awake to the fact that they can improve the quality just the same as they can that of any other product which they are raising. This awakening of the owners of woodland to their prospective value, is one of the most promising factors in our forestry work.

STATE FORESTS.

Our preliminary statement must be a repetition of that of the past three years. The department has been handicapped by the fact that owing to limited funds no fire protective or development work whatever was done on twenty-five out of forty-five state forests, and even among the remaining twenty several forests received very slight attention. We were fortunate in selling considerable timber, cordwood and other forest products. When the policy of purchasing state forests was first inaugurated, it was prophecied that because of the policy of purchasing cheap land, cut-over timber land and abandoned farms, no returns could be expected for many years. There have, however, been sales of forest products of from five to ten thousand dollars every year.

Ashburnham Forest. In the spring there were planted 22,000 pines on the Willard Lot and during the fall 15,000 spruce on the Corey Lot. The summer months were spent largely in *ribes* eradication. It was a poor year for this sort of work as frequent rains interrupted it. The crew on this forest gathered about seven tons of moss which was sent to the forest nurseries, where it is used in packing stock for shipment. A fire caused by the railroad burned over about fifteen acres of land on the Crocker tract.

Bash Bish Forest. The Taconic State Park Commission of New York, which controls the land on the New York side of the state line, has proceeded energetically with improvements to their property, building parking spaces, picnic grounds, comfort stations and now have commenced to widen and grade the road from Copake Falls to the Massachusetts line. In view of the thousands of dollars which New York state is spending, it might seem that Massachusetts could spend a few hundred dollars in improvements around the falls, such as fireplaces, picnic tables and water supply.

Beartown Forest. During the spring 39,000 spruce were set out on the Stevens Lot and during the fall considerable time was devoted to brushing out the boundary lines.

Brimfield Forest. About 95,000 trees (90,000 white and 5,000 red pine) were set on this forest. Owing to the fact that the land is well-stocked with sprout hardwoods, the pines were widely spaced and 150 acres of land covered. The main forest road through the Bramble Lot was cleared of brush.

Erving Forest. During the winter the crew of two men carried on release cutting on about 100 acres of planted and natural pine land. The spring months were occupied chiefly in the nursery in digging, shipping and transplanting 100,000 two year seedlings. During the season the crew assisted at several forest fires in the vicinity, the largest being in Wendell which burned over 100 acres or more of our state forest land in that town. Only 4,400 trees were set out in the forest, but during the summer repairs were made to the Laurel Lake road and a few miles of forest roads were brushed out.

Foxborough Forest. Work on this forest was confined to planting 35,000 trees on the burned over area which was cleared the year before.

Granville-Tolland Forest. We cleared out brush and inferior trees along both sides of the main road for about three miles of forest roads. We planted 25,000 red pine in the spring and 15,000 white during the fall. Grey birch and other inferior hardwoods were cut on 10 acres of land which had been planted. Considerable work was done on the McGrannis house in interior repairs.

Harold Parker Forest. Planting on this forest consisted in the use of 10,000 red pine and 10,000 white pine, mostly to fill in blanks in plantations established in previous years. Some two miles of forest road were made passable for autos by removal of rocks and filling in muddy spots with gravel and stones, and about fifty miles of fire lanes were mowed and the heavy brush burned. A serious problem is presented on this forest by a heavy infestation of gypsy moths. Conditions were bad last summer and will be worse this coming one. Lightly infested areas should be creosoted during the winter and heavily infested colonies sprayed in June. Conditions are complicated by the fact that this forest has many interior parcels owned by non-residents who, of course, will do nothing to protect their property; hence it becomes necessary for the department to do moth work on this land for our own protection.

Hubbardston Forest. In the fall the Otter River crew were transferred to the Hubbardston Forest where they planted 20,000 trees and released 20 acres of planted and young natural pine.

Leominster Forest. Operations on this forest were confined to the planting of 25,000 trees on a section from which cordwood had been taken under a previous cutting right.

Marthas Vineyard Forest. Brush was cut, piled and burned on four miles of fire line and one mile was plowed. About two miles of forest roads were cleared of brush. During the spring planting season 75,000 four year white and 6,000 three year red pines were set out. Minor repairs were made to the house and a garage and woodshed constructed.

Mohawk Trail Forest. Five thousand Norway spruce and 1,000 red pine were planted and a release cutting was made on 20 acres of natural reproduction. About 60 cords of spool wood and a few thousand feet of hardwood logs were sold to a local operator. A garage was built at the Brown place to house the car belonging to the patrolman. Brush was cut and burned on about two miles of forest road. Eighteen thousand seedlings were transplanted into the Totem nursery. There were 4,700 parties who spent the night at the camp ground on the state highway, and it is estimated that 10,000 persons stopped there for luncheon.

Monroe Forest. Work on this forest was confined to planting of 16,000 red pine and 1,000 spruce taken from the Totem Nursery on Mohawk Trail Forest.

Mount Grace Forest. During the fall months the Erving crew worked on this forest clearing out trails and graveling the entrance road from Warwick Village.

Myles Standish Forest. About two miles of new fire lines were cleared of brush, stumps and plowed; five or six miles of old fire lines re-mowed, and thirty-five harrowed. Planting work consisted of the setting of 170,000 white pine transplants in the Mast Road section. About 190,000 trees were shipped from the nursery and 120,000 set back in the nursery. A severe infestation of gypsy moths in the northwest part of the forest required attention and the woods were sprayed using a spraying outfit constructed by our own men. About two acres of pine plantation were pruned and branches burned. During the summer white pines infested with weevil were treated by cutting and burning infested tips. There were the usual repairs to the headquarters house and barn and telephone lines.

Oakham Forest. The plantations on the French Lot were released by cutting out birch and scrub pine and the brush near the state highway burned. A fire burned over a portion of the Robertson and Larkin Lot, destroying about 30 acres of planted land set out 15 years ago.

October Mountain Forest. Owing to the flood of November, 1927, the main road to the headquarters house was almost ruined, and two bridges completely washed away and others weakened. As a result a large share of the work done on this forest during the year was the repairing of this road and the replacing of the bridges. The town of Lee aided in this work by supplying a number of men and several teams and the town of Washington also gave some assistance. During the winter when road work was not practicable about 150,000 feet of hardwood logs were cut by our own men, and the logs sold to a local operator, to be sawed into ties and lumber, together with about 100 cords of fuel wood. An excellent profit resulted from this operation. Forest roads to the extent of 20 miles were cleared of brush and weeds. The only planting was the setting out of 5,000 trees used in filling in older plantations.

Otter River Forest. Releasing of plantation areas was carried on during the winter months. Spring and early summer was given over to work in the nursery and to field planting; 378,000 trees were taken out of the nursery, 150,000 red pine were put in, and 41,000 trees were planted in the area burned over three years ago. During the summer forest roads were brushed, the railroad fire lines plowed and a new and stronger bridge put across Otter River, giving access to the south side of the forest, which with the old bridge was always uncertain. Changes were made in the barn to house the fire truck which proved itself of great value at several fires during the spring. We continued the policy of allowing the poorer people of Baldwinville to cut trash wood under restrictions at the forest and during the past winter twenty-five persons cut about one hundred cords of wood which resulted in the releasing of 75 acres of pine plantations at no cost to the state. We wish that conditions were such that this sort of work could be performed in other forests.

Oxford Forest. The boundary lines of the lot on which the fire tower stands were brushed out to a width of ten feet.

Sandisfield Forest. The mature hardwood growth on the Tiffany Lot from which pine and hemlock had been culled before we purchased the lot, was sold to a local operator, who cut about 10,000 ties from the remains of the former operation. During the fall 15,000 Norway spruce were planted in an old field.

Shawme Forest. Brush was cleared and burned on three miles of new fire lines, two miles of which was plowed and harrowed. Seven miles of old line was har-

rowed. The power company harrowed the four miles of transmission line which was cleared and plowed the previous year, cleared three miles of forest roads of brush and constructed two miles of new road leading to water holes for fire protection. We planted 30,000 white, 30,000 red pine, and 10,000 spruce. One hundred acres of planted land was given a release cutting and the nursery was weeded and cared for.

Savoy Mountain Forest. Repaired about four miles of forest road which was badly washed by the flood of last fall, and cleared brush on fourteen miles of forest road; also released 50 acres of forest plantation. A small amount of standing cordwood was sold. Owing to a slump in the fern market no purchaser could be found for the fern rights on Savoy Mountain and Mohawk Trail forests. In co-operation with the Department of Agriculture who supplied a foreman, our crew carried on *ribes* eradication work in order to protect our pine plantations from blister rust. The crew covered about 1,000 acres, found twenty-one infected pines, and pulled 12,000 currant bushes.

Spencer Forest. The department continued a system inaugurated the previous year, of allowing persons from Spencer to go in and to cut inferior hardwoods such as grey birch and soft maple, for which they paid stumpage fees at the rate of fifty cents to one dollar per cord. In this way we were enabled to get rid of undesirable growth, at the same time bringing in a little income from the forest. In the fall the area so cleared was planted by the use of 50,000 white pine and 14,000 red pine. On the Chestnut Hill lot we continued the policy of thinning out the balsam fir plantation and selling the product as Christmas trees. Some 400 trees were cut which brought in about \$200.

Swann Forest. The regular forest roads and trails were cleared of brush. All white pine plantations were treated for weevil. The headquarters house was painted and 3,000 spruce were planted in the field.

Templeton Forest. Work on this forest was limited to the planting of 60,000 four-year red pine transplants on what is called the Hadley Tract.

Windsor Forest. Enlarged the parking space, and did some light thinning in the hemlock grove to improve the view of the gorge at Windsor Jams. Planted 70,000 spruce and 5,000 white pine in old fields.

AREA OF THE STATE FORESTS, NOVEMBER 30, 1928.

<i>Name of Forest</i>	<i>Acres</i>	<i>Name of Forest</i>	<i>Acres</i>
Arthur Warton Swann	986.75	Oakham	800.55
Ashburnham	1,078.075	October Mountain	13,652.6
Barre	349.125	Otis	2,772.81
Bash Bish	390.08	Otter River	1,812.46
Beartown	7,399.93	Oxford	28.7
Blandford	1,734.8	Peru	1,588.
Brimfield	910.14	Petersham	248.15
Clarksburg	1,764.	Pittsfield	1,155.84
Colrain	1,206.194	Sandisfield	4,210.76
Conway	1,563.12	Savoy Mountain	7,621.98
Erving	4,431.565	Shawme	*8,422.12
Foxborough	662.2412	Shutesbury	638.36
Harold Parker	1,327.6	Spencer	650.525
Hawley	2,131.	Sutton	262.7715
Hubbardston	724.37	Templeton	377.5
Leominster	1,636.2563	Tolland-Granville	4,682.25
Marthas Vineyard	*4,472.75	Warwick	960.45
Mohawk Trail	5,419.6	Wendell	4,667.46
Monroe	2,848.57	Westminster	335.12
Mount Grace	1,065.825	Windsor	1,450.05
Myles Standish	*8,869.	Worthington	225.
Northfield	235.4875	Unassigned	1,093.325
Total			108,863.2605

* Includes takings.

REPORT OF THE STATE FIRE WARDEN

MR. WILLIAM A. L. BAZELY, *State Forester*.

Sir:—In compliance with the provisions of section 26, chapter 48 of the General Laws, I submit herewith a report of the work accomplished by this branch of the division during the year just ended.

The year 1928 has been a favorable forest fire year and our wardens' reports show the least number of fires in many years. A large number of these fires, however, would have been very serious if we had not had an experienced body of men supplied with suitable equipment ready to give immediate assistance.

The control of these fires is largely due to the extensive use of our small portable power pumps which are especially constructed for forest fire work. These pumps weigh but 300 pounds and can be carried very easily to any small stream or pond, placed in operation in a few minutes and are capable of forcing water through 4,000 to 5,000 feet of one-inch hose and delivering a stream of water sufficient to extinguish a forest fire. The department now owns twenty-two of these pumps with a sufficient number of trucks for the transportation of them and other equipment. A large number of towns are providing their forest wardens with this type of equipment, thus showing an interest in reducing the fire losses in their towns.

Three new forest fire trucks were purchased and equipped with power pumps and hose together with a supply of smaller equipment and were assigned to district forest wardens Albert R. Ordway, Westfield; Joseph L. Peabody, Winchendon; and Charles L. Woodman, Douglas. Each outfit complete costs about \$3,000 and is used exclusively for forest fire work.

A new 68-ft. steel observation tower was erected on Prospect Mountain on the town line between Petersham and Phillipston. This station covers a large forested area including Harvard Forest and will be one of our most valuable towers. The towns of Athol, Barre, Dana, New Salem, Petersham, Phillipston and Templeton contributed \$100 each toward the cost of this tower. About one mile of telephone line was run through the woods to give us a direct line into the Athol exchange.

A new 68-ft. tower was also erected on the highest point in the Lynn Woods Reservation. This tower was purchased by the city of Lynn and we assisted in the construction of it with the understanding that it would be used by us during extremely dry periods as a sub-station.

Our men have done a large amount of maintenance work such as replacing telephone lines, painting towers and cleaning out trails.

A determined effort to stop the building of fires without first procuring a permit from the forest warden authorizing such fires was made with the result that over 100 parties who violated the law have either paid the cost of extinguishment or have been taken into court and made to pay a substantial fine. These fines ranged from five to fifty dollars in each case. Under date of April 7 it was necessary to request all forest wardens to discontinue the issuance of permits excepting for use on rainy days. This request met with the approval of all forest wardens and a general reduction of forest fires was noted.

Many of the towns throughout the eastern part of the State have adopted a forest fire patrol system by employing two or more patrolmen equipped with automobiles and fire fighting equipment to patrol various sections of the towns during Saturdays, Sundays, holidays and times of extreme drought. These patrolmen inspect public camping places, ponds and various points where people congregate and warn the public of the dangers of leaving campfires without being thoroughly extinguished and of dropping matches and cigarettes by the roadside. The reports received from these towns are very encouraging, many of them claiming that the patrol has lessened the number of fires in their towns and thereby reduced the expense of extinguishing.

The weather reports received through the United States Weather Bureau co-operating with the United States Forest Service have been received each morning by telephone at 10 A.M. These reports have given us very reliable information relative to wind velocity, humidity and general weather conditions twenty-four hours in advance. This has given us an opportunity to take advantage of bad fire conditions and plan our work accordingly.

We held two forest fire conferences during the year, one in Barnstable County and one at Boston which included the counties of the eastern part of the state. These meetings were attended by forest wardens, deputies and selectmen and topics relating to forestry and forest fires were discussed with a great deal of interest.

The annual meeting of our field men was held in Berkshire County on October 16 and 17. Inspection trips were made to our various state forests in that vicinity and evening meetings were held in Pittsfield and North Adams.

The Cape Cod forest fire prevention experiment, which was a three year experiment to determine the value of education and patrol in the prevention of forest fires, has been completed and the results are very satisfactory. A final report covering the entire three years has been published and copies of the same may be had upon request.

Seven forest fire organizations are now in operation throughout eastern Massachusetts and three in Worcester county have been added this year. These various organizations are made up of wardens and their deputies together with people interested in forestry and fire prevention. Meetings are held monthly during the year and they are very instructive and interesting. The total membership in these organizations is approximately 700 and it is expected that at least three more organizations will be established this year.

The State Police and Fish and Game wardens have again rendered very valuable assistance in the apprehension of parties burning brush without first procuring a permit and in assisting in the extinguishing of forest fires. This co-operation during our spring fire season when our men were extremely busy is much appreciated.

The continued co-operation of the United States Forest Service has proved very satisfactory. Our Federal allotment has been increased slightly and the satisfactory way in which Mr. C. R. Tillotson, who has charge of the Federal work in the New England states, has handled the situation has been very pleasing.

I desire to take this opportunity to express to my associates in this branch of the department and to all forest wardens and deputies my appreciation for their loyal support in this work. It is only through such co-operation that the best results can be accomplished.

The following tables show the comparative damages, costs, etc. for the past three years.

Respectfully submitted,
M. C. HUTCHINS,
State Fire Warden.

FOREST FIRES FOR THE PAST THREE YEARS

YEAR	Number of fires	Acreage burned	Cost to extinguish	Damage	Average acreage per fire	Average damage per fire
1926	2,860	34,675	\$61,030.00	\$163,668.00	12.12	57.22
1927	2,029	35,400	61,362.00	286,673.00	17.45	141.28
1928	930	12,516	20,402.00	58,824.00	13.46	63.25

TYPES OF CLASSIFIED DAMAGES

	1927	1928
Standing trees	\$183,203.00	\$28,166.00
Logs, lumber, cordwood	34,897.00	17,283.00
Buildings	52,427.00	7,865.00
Bridges, fences	1,114.00	2,553.00
Sproutland	15,032.00	2,957.00
Total	\$286,673.00	\$58,824.00

TYPES OF LAND BURNED OVER (ACRES).

	1927	1928
Timber	3,818	2,211
Second growth	6,325	2,273
Second growth, not merchantable	6,207	3,711
Brush land	15,032	2,957
Grass land	4,018	1,364
Total	35,400	12,516

FOREST FIRES OF 1928

Months	Number	Acres	Cost to extinguish	Damage
1927				
December	16	39	\$ 80.00	—
1928				
January	36	127	184.00	\$ 97.00
February	16	31	113.00	185.00
March	160	1,151	1,780.00	4,955.00
April	393	3,820	6,960.00	21,450.00
May	236	5,909	8,327.00	29,950.00
June	12	1,112	2,194.00	1,015.00
July	5	9	149.00	350.00
August	8	205	198.00	72.00
September	1	1	6.00	—
October	17	34	143.00	498.00
November	30	78	268.00	252.00
Total	930	12,516	\$20,402.00	\$58,824.00

CLASSIFIED CAUSES OF FOREST FIRES, 1927 - 1928.

	1927		1928	
	Number	Per Cent	Number	Per Cent
Railroad	450	22.18	198	21.29
Lumbering	3	.15	—	—
Brush burning	315	15.53	111	11.94
Campers	4	.20	2	.21
Incendiary	149	7.34	85	9.14
Unknown	462	22.77	144	15.48
Miscellaneous	646	31.83	390	41.94
Total	2,029	100.00	930	100.00

RAILROAD FIRES OF 1928.

Railroad	Mileage of track	Number of loco- motives	Number of fires	Acreage burned	Cost to extinguish	Damage
New York, New Haven & Hartford	1,931	1,042	107	612	\$1,267.00	\$2,851.00
Boston & Albany	969	334	21	287	319.00	2,031.00
Boston & Maine	1,936	846	68	416	666.00	1,176.00
Central Vermont	73	23	2	7	24.00	250.00
Total	4,909	2,245	198	1,322	\$2,276.00	\$6,308.00

REPORT OF THE SUPERINTENDENT OF MOTH WORK.

HON. WM. A. L. BAZELEY, *Commissioner*.

Sir:—In my reports to you of 1925, 1926 and 1927 I called attention to the critical state of the gypsy moth infestation in Massachusetts. It is almost impossible to predict exactly in what part of the state the infestation will be heaviest, and contrary to expectations the district of Cape Cod did not show the greatest amount of stripping in the summer. The central and northeastern parts of the state were badly infested, particularly Boxford, Georgetown, Rowley and New-

bury, in Essex County, Northborough and Westborough in Worcester County and Dunstable, Groton, Littleton and Marlborough in Middlesex County. The state as a whole, however, shows that conditions are worse than they have been for many years.

In order to control the gypsy moth effectively, there must be perfect co-operation between the state and the town, and the law, to be enforced properly, must be made a popular one, that is, one that individuals, communities and state recognize as just and one, the enforcement of which is conducive to safety, protection of property and enhancement of values. This is the general condition which we aim to bring about if possible.

To achieve this much desired state of affairs, this branch of the work of this division should have sufficient appropriations to be able to aid materially such towns as have a small liability not adequate for the amount of work to be done in the town. A town of this class, where only a small amount of money is appropriated, may adjoin one with a large liability. In order to protect the richer town, the state should assist by reimbursement the poorer town, so that equable conditions shall prevail.

These are the ideal conditions and I should like to see these established as far as possible.

During the spraying season last year the weather was very unfavorable. It rained practically every day, making it almost impossible to spray so that the poison would stay on the leaves. This, of course, added to the expense of spraying, causing considerable waste of both poison and labor. Consequently, later in the summer there was a heavy egg-laying, in all regions except the areas stripped. In these badly infested areas, the wilt disease disposes of large numbers of the insect, but there is always a migration of healthy ones to outside areas, where the egg-laying is sufficient to mean a large hatching in the spring. This, of course, is in the woodland where creosoting cannot be done, on account of the expense.

Probably this coming year it will be necessary to assist certain towns in the western part of the state, whose liability is small, which are generally infested.

The brown-tail moth situation remains about the same, the only really bad infestation being in Plum Island near Newburyport.

Co-operative work has been carried on on the North Shore under a private fund deposited by Colonel William D. Sohier, Agent. A financial statement showing the transactions of this fund is given here.

FINANCIAL STATEMENT,		
November 30, 1928.		
NORTH SHORE GYPSY MOTH SUPPRESSION SPECIAL FUND.		
<i>Receipts</i>		
Balance from 1927		\$1,629.67
1928		
Apr. 20	Wm. D. Sohier, Agent	1,000.00
Apr. 27	Department of Public Works	33.87
Apr. 30	Interest on Bank Deposit	8.12
May 18	Wm. D. Sohier, Agent	2,000.00
July 31	Department of Public Works	122.97
Sept. 7	Superintendent of Buildings	5.03
Sept. 21	Superintendent of Buildings	8.33
Oct. 25	Wm. D. Sohier, Agent	857.27
Oct. 31	Ernest Gruening	19.12
Oct. 31	Interest on Bank Deposit	23.35
		<hr/> \$5,707.73
<i>Expenditures</i>		
Pay roll		\$2,356.63
Rent		315.00
Travel and Teaming		43.08
Supplies, etc.		94.35
		<hr/> 2,809.06
Balance carried to 1929		<hr/> \$2,898.67

A report of the United States Department of Agriculture in charge of the parasite work follows.

Respectfully submitted,

G. A. SMITH,

Superintendent of Moth Work.

FEDERAL GYPSY MOTH WORK IN MASSACHUSETTS.

By A. F. BURGESS.

During the year 1928 the gypsy moth has continued to increase in Massachusetts, the acreage defoliated being somewhat greater than that of the previous year. Large areas of woodland are now heavily infested in Worcester County and smaller areas of severe infestation occur as far west as Berkshire County. In the latter county where the field work is handled by the Federal Government as a part of the barrier zone project, the number of infestations found in the Fall of 1928 exceeded those of the previous year. As a result of the increase in infestation that has been reported west of the Connecticut River, 13 towns which were formerly classified as slightly infested, have been added to the generally infested area for the purpose of enforcing the gypsy moth quarantine. It is apparent that very strenuous work will be required to prevent the insect from increasing in the territory west of the Connecticut River to a point where heavy defoliation will result and conditions will become favorable for rapid spread.

During the last few years parasitism has been very low and climatic conditions have not been favorable for reducing the abundance of this pest. A slight increase in parasitism has been noted during the past year but it does not seem to be sufficient to bring about a reduction of the insect. Importations of parasites from Europe have been continued and colonies have been liberated in sections that seemed to be most favorable for their increase and development.

Quarantine and inspection work designed to prevent the spread of the insect from the territory where it now occurs has been continued during the past year and has safeguarded the uninfested portions of Massachusetts and other states from becoming infested with this insect.

There has been no unusual increase of the brown-tail moth and although the winter webs are more abundant than usual in a limited number of localities, the insect can usually be satisfactorily controlled if the webs are destroyed during the winter.

APPENDIX.

FINANCIAL STATEMENT

Receipts and Expenditures for the Year Ending November 30, 1928.

Purpose of Appropriation	Amount	Refunds, etc.	Expendi- tures	Balance to 1929	Balance to Treasury
Salary of Commissioner	\$6,000.00	—	\$6,000.00	—	—
Personal Services	12,500.00	—	12,470.00	—	\$30.00
Expenses of Commissioner	250.00	—	196.07	—	53.93
Office Incidentals	4,000.00	—	3,952.16	—	47.84
General Forestry and Nurseries	12,500.00	\$23.53	12,519.01	—	4.52
Purchase and Planting of					
Forest Lands	5,000.00	—	4,228.83	—	771.17
Prevention of Forest Fires	63,000.00	807.50	63,807.50	—	—
Federal Forestry Fund	24,192.95	599.83	24,532.30	\$260.48	—
Protection against Forest Fires	2,000.00	—	1,005.27	—	994.73
Reimbursement for Fighting					
Forest Fires	2,500.00	—	593.50	—	1,906.50
Suppression of Gypsy and					
Brown-Tail Moths	55,000.00	2,654.60	57,600.78	53.82	—
Maintenance of State Forests . . .	25,000.00	76.34	25,071.43	—	4.91
Purchase and Development of					
State Forests	100,000.00	29.71	98,315.39	1,714.32	—
Maintenance of Mount Grace . . .	500.00	—	497.90	—	2.10
Maintenance of Standish Monu- ment	2,000.00	—	1,982.76	—	17.24
Repair of Standish Monument . . .	—	2,217.34	51.10 to Mar. 21	2,166.24	—
Prevention of Forest Fires in Barnstable County	1,500.00	—	1,499.70	—	.30
Construction of Road to Stand- ish Monument	—	349.05	40.00	309.05	to Mar. 31
Comfort Station at Standish Monument	3,000.00	—	2,983.51	—	16.49
Patrol, Lower Cape	1,350.00	—	1,145.87	—	204.13
Totals	\$320,292.95	\$6,757.90	\$318,493.08	\$4,503.91	\$4,033.86

Receipts, 1923.

For ferns sold	\$ 210.00
" cord wood	1,250.06
" hay and pasturage	100.00
" blueberries and fruit	153.50
" lumber, posts, etc.	5,869.49
" press brush and Christmas trees	463.41
" rent and camp sites	1,593.00
" sale of buildings, etc.	25.00
" miscellaneous	259.50
" receipts at Standish monument	728.10
" books, maps, etc.	42.50
" redemption of lots	1,367.24
" examinations	135.20
" trees sold	15,998.80
" highway work (use of sprayers)	400.00
" supplies for gypsy moth work	277.25
" contributions to fire towers	900.00
" supplies for fire fighting	2,394.90
" interest on bank deposits	82.12
Total	\$32,250.07

STATEMENT OF EXPENDITURES AND RECEIPTS ON STATE FORESTS FOR THE
YEAR ENDING NOVEMBER 30, 1928.

State Forest	Planting and Nurseries	General Up- keep, Fire Lines and Roads	Surveying Titles	Land	Totals	Receipts
Arthur Warton Swann	\$33.76	\$1,713.55	—	—	\$1,747.31	—
Ashburnham	537.15	1,191.20	—	—	1,728.35	\$207.40
Barre	—	11.62	\$308.91	—	320.53	10.00
Bash Bish	—	—	—	—	—	—
Beartown	303.76	67.50	102.00	—	473.26	60.00
Blandford	—	83.58	—	—	83.58	—
Brimfield	1,704.85	155.00	240.35	—	2,100.20	—
Clarksburg	—	—	609.24	—	609.24	—
Colrain	—	257.00	102.30	—	359.30	—
Conway	—	4.00	233.38	—	237.38	—
Erving	946.15	1,877.75	—	—	2,823.90	200.50
Foxborough	297.00	92.44	—	—	389.44	42.00
Harold Parker	303.70	2,714.34	—	—	3,018.04	198.75
Hawley	—	—	41.35	—	41.35	258.78
Hubbardston	164.70	31.65	—	—	196.35	—
Leominster	297.25	16.00	176.25	—	489.50	227.25
Marthas Vineyard	822.36	5,143.58	1.16	\$1,000.00	6,967.10	—
Mohawk Trail	194.00	1,255.98	—	—	1,449.98	779.43
Monroe	93.03	48.69	559.46	—	701.18	50.00
Mount Grace	—	541.65	—	—	541.65	328.96
Myles Standish	1,967.17	7,366.04	25.20	—	9,358.41	1,275.58
Northfield	—	—	—	—	—	—
Oakham	—	213.39	460.25	—	673.64	12.00
October Mountain	56.00	10,800.54	—	—	10,856.54	3,877.82
Otis	—	—	178.00	—	178.00	50.00
Otter River	2,117.85	3,834.09	65.30	—	6,017.24	123.26
Oxford	—	91.72	—	—	91.72	—
Peru	—	—	—	—	—	—
Petersham	—	—	—	—	—	—
Pittsfield	—	—	—	—	—	—
Sandisfield	301.65	—	74.25	—	375.90	1,641.65
Savoy Mountain	—	1,158.92	3.50	—	1,162.42	69.60
Shawme	1,028.85	5,691.31	44.17	103.27	6,867.60	34.25
Shutesbury	—	—	—	—	—	—
Spencer	887.86	236.72	7.75	—	1,132.33	237.02
Sutton	—	—	—	—	—	—
Templeton	638.30	28.60	442.94	—	1,109.84	—
Tolland-Granville	246.40	3,266.98	104.00	—	3,617.38	125.00
Warwick	—	102.60	641.36	—	743.96	15.00
Wendell	—	124.24	1,822.89	—	1,947.13	—
Westminster	—	—	—	—	—	—
Windsor	411.50	26.22	296.50	—	734.22	99.71
Worthington	—	—	29.50	—	29.50	—
Totals	\$13,353.29	\$48,146.90	\$6,570.01	\$1,103.27	\$69,173.47	\$9,923.96

THE DISTRIBUTION OF SUPPLIES.

Supplies have been furnished to towns and cities for gypsy moth work as far as our limited appropriation warranted.

The amounts given below do not correspond with the amount of aid given to the municipalities, as some towns make payment to the state for all or a part of the bill for supplies, according to the amount of their net expenditures and their class, under the provisions of section 4, chapter 132 of the General Laws.

For amounts received from this office in reimbursement, and for expenditures, see table on page —.

LIST OF TOWNS AND AMOUNTS OF SUPPLIES FURNISHED FOR 1928.

Ashby	\$126.11	Middleton	\$293.32
Berkley	265.08	North Reading	458.84
Berlin	245.13	Norwell	367.56
Bolton	482.09	Pembroke	1,362.06
Boxborough	384.58	Plainville	253.80
Boxford	358.17	Plympton	211.76
Boylston	189.91	Raynham	215.29
Brewster	361.88	Rowley	540.91
Carlisle	425.96	Sandwich	580.69
Dennis	400.25	Sherborn	462.84
Dunstable	250.99	Shirley	192.09
Eastham	142.27	Sterling	207.50
Freetown	300.13	Stow	439.59
Georgetown	650.51	Sudbury	243.54
Halifax	395.66	Truro	100.48
Harwich	623.88	Tyngsboro	513.52
Kingston	357.24	Wellfleet	186.00
Lakeville	548.94	West Bridgewater	437.81
Lunenburg	139.81	West Newbury	272.58
Lynnfield	328.88		
Mashpee	385.59	Total	\$14,703.24

Purchases for other than town supplies made through storehouse:

General Forestry and Nurseries	\$125.92
Maintenance of State Forests	590.83
Prevention of Forest Fires	680.44
Prevention of Forest Fires in Barnstable County	64.70
Purchase and Development of State Forests	417.58
Purchase and Planting of Forest Lands	25.07
Fisheries and Game Division	20.75
North Shore Special Work	21.84
Automobile repairs, etc. (Gypsy Moth)	574.74
Miscellaneous	28.44

Total \$2,550.31

TABLE SHOWING EXPENDITURES AND REIMBURSEMENTS OF TOWNS AND CITIES FOR THE YEAR 1928.

Cities and Towns	1928				1929		
	Required Expendi- ture	Total Net ture	Private Work	Reim- burse- ment	Tools Supplied	Total Amount Received from State	Required Expendi- ture
Abington . . .	\$2,681.55	—	—	—	—	—	\$2,727.28
Acton . . .	1,269.89	—	—	—	—	—	1,607.16
Acushnet . . .	1,849.38	—	—	—	—	—	1,875.48
Adams . . .	5,000.00	—	—	—	—	—	5,000.00
Agawam . . .	3,421.15	—	—	—	—	—	3,881.08
Alford . . .	138.59	—	—	—	—	—	137.05

Cities and Towns	1928						1929
	Required Expenditure	Total Net Expenditure	Private Work	Reimbursement	Tools Supplied	Total Amount Received from State	Required Expenditure
Amesbury . . .	5,000.00	—	—	—	—	—	5,000.00
Amherst . . .	4,262.74	—	—	—	—	—	4,128.02
Andover . . .	5,000.00	—	—	—	—	—	5,000.00
Arlington . . .	5,000.00	—	—	—	—	—	5,000.00
Ashburnham . .	842.92	—	—	—	—	—	5,000.00
Ashby . . .	556.30	\$553.87	\$65.50	—	—	—	792.56
			*122.30	—	—	—	420.11
Ashfield . . .	583.00	—	—	—	\$126.11	\$123.68	—
Ashland . . .	1,274.59	—	—	—	—	—	598.99
Athol . . .	5,000.00	—	—	—	—	—	1,096.15
Attleboro . . .	5,000.00	—	—	—	—	—	5,000.00
Auburn . . .	1,942.35	—	—	—	—	—	5,000.00
Avon . . .	1,039.48	—	—	—	—	—	2,297.30
Ayer . . .	1,570.76	—	—	—	—	—	956.63
Barnstable . . .	5,000.00	—	—	—	—	—	1,639.51
Barre . . .	2,438.27	—	—	—	—	—	5,000.00
Becket . . .	448.73	—	—	—	—	—	1,846.45
Bedford . . .	1,249.82	—	—	—	—	—	338.53
Belchertown . .	884.87	—	—	—	—	—	1,155.09
Bellingham . . .	1,065.49	—	—	—	—	—	814.75
Belmont . . .	5,000.00	—	—	—	—	—	1,187.06
Berkley . . .	397.43	719.25	112.50	319.30	265.08	584.38	5,000.00
Berlin . . .	431.37	431.37	91.05	—	245.13	245.13	404.96
		*33.81	—	—	—	—	445.04
Bernardston . .	405.66	—	—	—	—	—	—
Beverly . . .	5,000.00	—	—	—	—	—	409.27
Billerica . . .	4,083.21	—	—	—	—	—	5,000.00
Blackstone . . .	1,270.90	—	—	—	—	—	4,655.87
Blanford . . .	520.09	—	—	—	—	—	1,259.12
Bolton . . .	\$418.54	\$430.92	\$205.24	—	\$482.09	\$482.09	484.11
			*161.75	—	—	—	\$532.58
Boston . . .	5,000.00	—	—	—	—	—	—
Bourne . . .	3,900.66	—	—	—	—	—	5,000.00
Boxborough . . .	145.00	145.00	*331.20	—	384.58	384.58	3,763.10
Boxford . . .	458.91	1,456.76	532.01	622.40	358.17	980.57	154.67
Boylston . . .	341.05	540.88	280.25	199.50	189.91	389.41	545.17
			*59.78	—	—	—	381.41
Braintree . . .	5,000.00	—	—	—	—	—	5,000.00
Brewster . . .	655.35	953.50	639.16	200.00	361.88	561.88	781.97
Bridgewater . .	3,186.79	—	—	—	—	—	2,757.06
Brimfield . . .	606.48	—	—	—	—	—	613.73
Brockton . . .	5,000.00	—	—	—	—	—	5,000.00
Brookfield . . .	693.70	—	—	—	—	—	627.16
Brookline . . .	5,000.00	—	—	—	—	—	5,000.00
Buckland . . .	1,333.28	—	—	—	—	—	1,398.61
Burlington . . .	754.54	—	—	—	—	—	986.14
Cambridge . . .	5,000.00	—	—	—	—	—	5,000.00
Canton . . .	3,941.46	—	—	—	—	—	4,077.27
Carlisle . . .	270.00	824.99	—	554.96	425.96	980.95	311.79
Carver . . .	1,291.63	—	—	—	—	—	1,274.51
Charlemont . . .	476.76	—	—	—	—	—	524.14
Charlton . . .	1,012.88	—	—	—	—	—	915.67
Chatham . . .	1,865.34	—	—	—	—	—	2,133.66
Chelmsford . . .	4,394.04	—	—	—	—	—	4,088.15
Chelsea . . .	5,000.00	—	—	—	—	—	5,000.00
Cheshire . . .	677.02	—	—	—	—	—	748.76
Chester . . .	695.59	—	—	—	—	—	688.20
Chesterfield . .	231.79	—	—	—	—	—	241.12
Chicopee . . .	5,000.00	—	—	—	—	—	5,000.00
Chilmark . . .	210.37	—	—	—	—	—	243.24
Clarksburg . . .	587.44	—	—	—	—	—	424.21
Clinton . . .	5,000.00	—	—	—	—	—	5,000.00
Cohasset . . .	3,835.91	—	—	—	—	—	4,242.80
Colrain . . .	999.85	—	—	—	—	—	768.84
Concord . . .	3,783.74	—	—	—	—	—	3,699.60
Conway . . .	448.08	—	—	—	—	—	452.89
Cummington . .	243.34	—	—	—	—	—	242.71
Dalton . . .	3,387.57	—	—	—	—	—	3,109.10
Dana . . .	361.68	—	—	—	—	—	334.57
Danvers . . .	5,000.00	—	—	—	—	—	5,000.00
Dartmouth . . .	4,856.57	—	—	—	—	—	5,000.00

* Lead sold

Cities and Towns	1928						1929
	Required Expenditure	Total Net Expenditure	Private Work	Reimbursement	Tools Supplied	Total Amount Received from State	Required Expenditure
Dedham . .	5,000.00	—	—	—	—	—	5,000.00
Deerfield . .	2,267.38	—	—	—	—	—	2,226.47
Dennis . .	890.44	1,040.04	334.56 *69.12	149.60	400.25	549.85	1,327.14
Dighton . .	1,959.46	—	—	—	—	—	2,125.50
Douglas . .	997.02	—	—	—	—	—	894.08
Dover . .	1,491.97	—	—	—	—	—	1,480.10
Dracut . .	2,427.04	—	—	—	—	—	2,279.42
Dudley . .	2,827.39	—	—	—	—	—	2,143.91
Dunstable . .	279.94	481.37	196.01 *104.88	201.43	250.99	452.42	200.64
Duxbury . .	2,202.50	—	—	—	—	—	2,593.69
E. Bridgewater . .	2,227.03	—	—	—	—	—	2,277.23
East Brookfield . .	503.08	—	—	—	—	—	492.45
E. Longmeadow . .	1,427.42	—	—	—	—	—	1,541.60
Eastham . .	376.42	475.54	220.38	99.00	142.27	241.27	455.57
Easthampton . .	5,000.00	—	—	—	—	—	5,000.00
Easton . .	3,056.34	—	—	—	—	—	2,733.18
Edgartown . .	1,223.10	—	—	—	—	—	1,654.26
Egremont . .	391.66	—	—	—	—	—	414.61
Enfield . .	347.74	—	—	—	—	—	321.57
Erving . .	1,689.07	—	—	—	—	—	1,286.01
Essex . .	632.14	—	—	—	—	—	662.12
Everett . .	5,000.00	—	—	—	—	—	5,000.00
Fairhaven . .	5,000.00	—	—	—	—	—	5,000.00
Fall River . .	5,000.00	—	—	—	—	—	5,000.00
Falmouth . .	5,000.00	—	—	—	—	—	5,000.00
Fitchburg . .	5,000.00	—	—	—	—	—	5,000.00
Florida . .	\$669.98	—	—	—	—	—	\$685.41
Foxborough . .	2,002.80	—	—	—	—	—	2,442.35
Framingham . .	5,000.00	—	—	—	—	—	5,000.00
Franklin . .	4,184.79	—	—	—	—	—	3,995.25
Freetown . .	902.21	904.01	357.75	—	300.13	300.13	884.69
Gay Head . .	40.30	—	—	—	—	—	50.42
Gardner . .	5,000.00	—	—	—	—	—	5,000.00
Georgetown . .	873.57	1,153.17	963.50	244.00	650.51	894.51	849.58
Gill . .	403.92	—	—	—	—	—	402.69
Gloucester . .	5,000.00	—	—	—	—	—	5,000.00
Goshen . .	169.27	—	—	—	—	—	183.41
Gosnold . .	513.31	—	—	—	—	—	552.98
Grafton . .	3,208.53	—	—	—	—	—	2,503.00
Granby . .	486.00	—	—	—	—	—	487.13
Granville . .	339.73	—	—	—	—	—	326.74
Gt. Barrington . .	5,000.00	—	—	—	—	—	4,832.02
Greenfield . .	5,000.00	—	—	—	—	—	5,000.00
Greenwich . .	281.82	—	—	—	—	—	255.94
Groton . .	1,779.15	—	—	—	—	—	2,000.80
Groveland . .	798.44	—	—	—	—	—	849.39
Hadley . .	1,737.89	—	—	—	—	—	1,399.85
Halifax . .	586.85	786.53	465.91 *107.84	199.68	395.66	595.34	620.58
Hamilton . .	2,183.02	—	—	—	—	—	2,380.85
Hampden . .	272.13	—	—	—	—	—	273.15
Hancock . .	276.08	—	—	—	—	—	257.35
Hanover . .	1,467.79	—	—	—	—	—	1,479.01
Hanson . .	1,116.18	—	—	—	—	—	1,042.31
Hardwick . .	2,351.58	—	—	—	—	—	1,846.43
Harvard . .	927.84	—	—	—	—	—	1,111.37
Harwich . .	1,400.07	1,361.47	1,068.76 *68.16	—	623.88	585.28	2,126.37
Hatfield . .	1,858.07	—	—	—	—	—	1,384.58
Haverhill . .	5,000.00	—	—	—	—	—	5,000.00
Hawley . .	124.31	—	—	—	—	—	124.41
Heath . .	201.05	—	—	—	—	—	200.75
Hingham . .	5,000.00	—	—	—	—	—	5,000.00
Hinsdale . .	458.38	—	—	—	—	—	451.65
Holbrook . .	1,436.43	—	—	—	—	—	1,529.81
Holden . .	1,356.24	—	—	—	—	—	1,561.00
Holland . .	108.37	—	—	—	—	—	102.70
Holliston . .	1,578.96	—	—	—	—	—	1,553.51
Holyoke . .	5,000.00	—	—	—	—	—	5,000.00

*Lead sold

Cities and Towns	1928						1929
	Required Expenditure	Total Net Expenditure	Private Work	Reimbursement	Tools Supplied	Total Amount Received from State	Required Expenditure
Hopedale . . .	3,552.96	—	—	—	—	—	2,582.07
Hopkinton . . .	1,205.67	—	—	—	—	—	1,216.69
Hubbardston . . .	551.42	—	—	—	—	—	522.55
Hudson . . .	3,702.91	—	—	—	—	—	3,520.47
Hull . . .	5,000.00	—	—	—	—	—	5,000.00
Huntington . . .	702.89	—	—	—	—	—	635.37
Ipswich . . .	3,899.02	—	—	—	—	—	4,032.05
Kingston . . .	1,226.31	1,299.77	—	—	357.24	357.24	1,570.94
Lakeville . . .	700.31	850.80	260.70	150.06	548.94	699.00	675.58
			*68.16				
Lancaster . . .	1,530.56	—	—	—	—	—	1,630.80
Lanesborough . . .	593.04	—	—	—	—	—	584.65
Lawrence . . .	5,000.00	—	—	—	—	—	5,000.00
Lee . . .	2,739.24	—	—	—	—	—	2,574.45
Leicester . . .	2,126.21	—	—	—	—	—	1,873.07
Lenox . . .	3,170.37	—	—	—	—	—	2,963.72
Leominster . . .	5,000.00	—	—	—	—	—	5,000.00
Leverett . . .	247.62	—	—	—	—	—	243.50
Lexington . . .	5,000.00	—	—	—	—	—	5,000.00
Leyden . . .	146.29	—	—	—	—	—	144.94
Lincoln . . .	1,410.60	—	—	—	—	—	1,377.42
Littleton . . .	853.37	—	—	—	—	—	1,111.18
Longmeadow . . .	3,264.26	—	—	—	—	—	3,667.04
Lowell . . .	5,000.00	—	—	—	—	—	5,000.00
Ludlow . . .	4,432.07	—	—	—	—	—	4,570.69
Lunenburg . . .	825.72	1,367.12	910.06	300.75	139.81	440.56	1,018.24
Lynn . . .	5,000.00	—	—	—	—	—	5,000.00
Lynnfield . . .	1,162.73	1,331.66	427.75	168.93	328.88	497.81	1,354.57
Malden . . .	5,000.00	—	—	—	—	—	5,000.00
Manchester . . .	5,000.00	—	—	—	—	—	5,000.00
Mansfield . . .	4,542.62	—	—	—	—	—	3,599.11
Marblehead . . .	5,000.00	—	—	—	—	—	5,000.00
Marion . . .	1,940.36	—	—	—	—	—	1,951.97
Marlborough . . .	\$5,000.00	—	—	—	—	—	\$5,000.00
Marshfield . . .	2,068.19	—	—	—	—	—	2,623.10
Mashpee . . .	309.42	768.61	1,036.20	306.56	385.59	692.15	446.76
			*30.00				
Mattapoisett . . .	1,326.19	—	—	—	—	—	1,578.24
Maynard . . .	4,230.12	—	—	—	—	—	3,354.41
Medfield . . .	1,282.77	—	—	—	—	—	1,242.33
Medford . . .	5,000.00	—	—	—	—	—	5,000.00
Medway . . .	1,478.11	—	—	—	—	—	1,462.08
Melrose . . .	5,000.00	—	—	—	—	—	5,000.00
Mendon . . .	502.73	—	—	—	—	—	546.50
Merrimac . . .	1,014.54	—	—	—	—	—	1,008.03
Methuen . . .	5,000.00	—	—	—	—	—	5,000.00
Middleborough . . .	4,318.00	—	—	—	—	—	4,025.97
Middlefield . . .	145.10	—	—	—	—	—	150.50
Middleton . . .	681.49	1,033.29	71.00	250.00	293.32	543.32	698.15
			*40.88				
Milford . . .	5,000.00	—	—	—	—	—	5,000.00
Millbury . . .	3,086.71	—	—	—	—	—	2,547.10
Millis . . .	1,438.02	—	—	—	—	—	1,409.79
Millville . . .	1,035.71	—	—	—	—	—	817.85
Milton . . .	5,000.00	—	—	—	—	—	5,000.00
Monroe . . .	419.10	—	—	—	—	—	470.08
Monson . . .	1,699.76	—	—	—	—	—	1,671.15
Montague . . .	5,000.00	—	—	—	—	—	5,000.00
Monterey . . .	321.92	—	—	—	—	—	332.53
Montgomery . . .	107.27	—	—	—	—	—	112.71
Mt. Washington . . .	90.96	—	—	—	—	—	92.26
Nahant . . .	2,354.33	—	—	—	—	—	2,133.56
Nantucket . . .	3,862.23	—	—	—	—	—	4,256.75
Natick . . .	5,000.00	—	—	—	—	—	5,000.00
Needham . . .	5,000.00	—	—	—	—	—	5,000.00
New Ashford . . .	60.61	—	—	—	—	—	60.14
New Bedford . . .	5,000.00	—	—	—	—	—	5,000.00
New Braintree . . .	265.92	—	—	—	—	—	262.41
New Marlborough . . .	711.54	—	—	—	—	—	698.73
New Salem . . .	340.11	—	—	—	—	—	327.72
Newbury . . .	1,191.92	—	—	—	—	—	1,036.09

* Lead sold

Cities and Towns	1928						1929
	Required Expenditure	Total Net Expenditure	Private Work	Reimbursement	Tools Supplied	Total Amount Received from State	Required Expenditure
Newburyport .	5,000.00	—	—	—	—	—	5,000.00
Newton . . .	5,000.00	—	—	—	—	—	5,000.00
Norfolk . . .	829.40	—	—	—	—	—	741.07
North Adams .	5,000.00	—	—	—	—	—	5,000.00
North Andover .	4,760.94	—	—	—	—	—	4,285.47
N. Attleborough	5,000.00	—	—	—	—	—	4,723.62
N. Brookfield .	1,516.56	—	—	—	—	—	1,349.62
No. Reading . .	826.46	808.99	600.00	—	458.84	441.37	955.49
Northampton .	5,000.00	—	—	—	—	—	5,000.00
Northborough .	953.83	—	—	—	—	—	920.15
Northbridge . .	5,000.00	—	—	—	—	—	5,000.00
Northfield . . .	1,111.38	—	—	—	—	—	1,103.35
Norton	1,424.37	—	—	—	—	—	1,242.33
Norwell	810.99	937.27	979.32	—	367.56	367.56	861.61
			*60.40				
			†18.00				
Norwood	5,000.00	—	—	—	—	—	5,000.00
Oak Bluffs . . .	1,762.41	—	—	—	—	—	1,811.75
Oakham	217.70	—	—	—	—	—	227.21
Orange	3,127.79	—	—	—	—	—	2,643.92
Orleans	1,572.13	—	—	—	—	—	1,598.54
Otis	236.88	—	—	—	—	—	235.47
Oxford	1,725.64	—	—	—	—	—	1,587.72
Palmer	5,000.00	—	—	—	—	—	5,000.00
Paxon	421.16	—	—	—	—	—	424.28
Peabody	5,000.00	—	—	—	—	—	5,000.00
Pelham	291.95	—	—	—	—	—	285.43
Pembroke	1,068.59	1,585.12	1,043.86	200.00	1,362.06	1,562.06	1,160.06
Pepperell	1,783.55	—	—	—	—	—	1,484.51
Peru	167.42	—	—	—	—	—	162.56
Petersham	824.97	—	—	—	—	—	815.63
Phillipston . . .	203.40	523.20	127.20	148.00	—	148.00	193.23
Pittsfield	5,000.00	—	—	—	—	—	5,000.00
Plainfield	180.31	—	—	—	—	—	182.96
			† Elm beetle work				
Plainville	\$807.11	\$1,048.42	\$146.50	\$210.00	\$253.80	\$454.80	\$734.76
Plymouth	5,000.00	—	—	—	—	—	5,000.00
Plympton	361.99	620.34	166.15	258.00	211.76	469.76	311.93
			*5.25				
Prescott	151.65	—	—	—	—	—	117.50
Princeton	603.93	—	—	—	—	—	636.31
Provincetown . .	2,067.01	—	—	—	—	—	1,997.18
Quincy	5,000.00	—	—	—	—	—	5,000.00
Randolph	1,860.01	—	—	—	—	—	2,316.40
Raynham	859.27	904.23	188.35	—	215.29	215.29	847.50
Reading	5,000.00	—	—	—	—	—	5,000.00
Rehoboth	929.27	—	—	—	—	—	867.17
Revere	5,000.00	—	—	—	—	—	5,000.00
Richmond	381.30	—	—	—	—	—	355.81
Rochester	640.19	—	—	—	—	—	641.24
Rockland	3,970.00	—	—	—	—	—	3,837.31
Rockport	2,282.93	—	—	—	—	—	2,409.87
Rowe	175.56	—	—	—	—	—	322.09
Rowley	586.03	586.02	413.93	—	540.91	540.90	683.22
			*302.65				
Royalston	645.44	—	—	—	—	—	536.08
Russell	2,533.48	—	—	—	—	—	2,162.82
Rutland	654.57	—	—	—	—	—	631.41
Salem	5,000.00	—	—	—	—	—	5,000.00
Salisbury	1,222.22	—	—	—	—	—	1,549.60
Sandisfield	300.59	—	—	—	—	—	316.09
Sandwich	1,088.36	1,157.50	85.50	—	580.69	580.69	1,090.69
			*102.60				
Saugus	4,572.32	—	—	—	—	—	5,000.00
Savoy	131.07	—	—	—	—	—	134.00
Scituate	4,401.05	—	—	—	—	—	5,000.00
Seekonk	1,775.15	—	—	—	—	—	1,978.56
Sharon	2,222.03	—	—	—	—	—	2,522.57
Sheffield	664.61	—	—	—	—	—	644.00
Shelburne	1,338.08	—	—	—	—	—	1,827.43
Sherborn	729.26	716.96	385.69	—	462.84	450.54	723.46

*Lead sold

Cities and Towns	1928						1929
	Required Expenditure	Total Net Expenditure	Private Work	Reimbursement	Tools Supplied	Total Amount Received from State	Required Expenditure
Shirley . . .	1,244.44	1,275.75	58.00 *71.00	—	192.09	192.09	1,005.40
Shrewsbury . .	2,509.55	—	—	—	—	—	3,226.47
Shutesbury . .	193.56	—	—	—	—	—	215.33
Somerset . . .	2,035.39	—	—	—	—	—	4,860.84
Somerville . . .	5,000.00	—	—	—	—	—	5,000.00
South Hadley . .	3,362.54	—	—	—	—	—	3,187.85
Southampton . .	403.02	—	—	—	—	—	390.91
Southborough . .	1,507.66	—	—	—	—	—	1,598.69
Southbridge . .	5,000.00	—	—	—	—	—	5,000.00
Southwick . . .	927.80	—	—	—	—	—	830.81
Spencer	2,148.01	—	—	—	—	—	1,962.35
Springfield . .	5,000.00	—	—	—	—	—	5,000.00
Sterling	712.88	706.63	6.87	—	207.50	201.25	720.70
Stockbridge . .	2,514.39	—	—	—	—	—	2,367.73
Stoneham . . .	4,372.54	—	—	—	—	—	5,000.00
Stoughton . . .	3,469.49	—	—	—	—	—	3,906.03
Stow	834.30	1,006.28	111.05 *288.72	171.98	439.59	611.57	736.94
Sturbridge . . .	721.72	—	—	—	—	—	588.74
Sudbury	983.40	1,024.87	46.28 *166.32	—	243.54	243.54	1,081.94
Sunderland . . .	644.64	—	—	—	—	—	647.87
Sutton	1,058.32	—	—	—	—	—	808.23
Swampscott . . .	5,000.00	—	—	—	—	—	5,000.00
Swansea	1,513.48	—	—	—	—	—	1,827.38
Taunton	5,000.00	—	—	—	—	—	5,000.00
Templeton . . .	1,903.53	—	—	—	—	—	1,575.28
Tewksbury . . .	1,480.27	—	—	—	—	—	1,379.48
Tisbury	1,824.75	—	—	—	—	—	2,381.81
Tolland	191.47	—	—	—	—	—	162.04
Topsfield	1,279.56	—	—	—	—	—	1,247.66
Townsend	1,121.61	—	—	—	—	—	1,029.63
Truro	\$410.28	\$420.28	\$80.50	—	\$100.48	\$100.48	\$462.26
Tyngsborough . .	567.81	816.07	191.00 *80.00	195.75	513.52	709.27	556.86
Tyringham . . .	223.24	—	—	—	—	—	223.61
Upton	669.88	—	—	—	—	—	646.29
Uxbridge	3,965.12	—	—	—	—	—	3,617.09
Wakefield	5,000.00	—	—	—	—	—	5,000.00
Wales	227.00	—	—	—	—	—	208.43
Walpole	5,000.00	—	—	—	—	—	5,000.00
Waltham	5,000.00	—	—	—	—	—	5,000.00
Ware	4,741.57	—	—	—	—	—	3,465.50
Wareham	4,904.70	—	—	—	—	—	5,000.00
Warren	2,640.13	—	—	—	—	—	2,110.79
Warwick	263.43	—	—	—	—	—	231.62
Washington . . .	116.88	—	—	—	—	—	114.39
Watertown . . .	5,000.00	—	—	—	—	—	5,000.00
Wayland	1,958.77	—	—	—	—	—	2,134.68
Webster	5,000.00	—	—	—	—	—	5,000.00
Wellesley	5,000.00	—	—	—	—	—	5,000.00
Wellfleet	505.77	682.50	203.45 *3.74	175.60	186.00	361.60	605.03
Wendell	512.14	—	—	—	—	—	476.54
Wenham	1,364.56	—	—	—	—	—	1,363.76
West Boylston . .	685.16	—	—	—	—	—	785.07
W. Bridgewater .	1,140.72	1,523.72	819.90 *85.00	—	437.81	437.81	1,326.78
W. Brookfield . .	681.92	—	—	—	—	—	691.67
West Newbury . .	485.02	612.34	143.60 *92.95	127.30	272.58	399.88	516.40
W. Springfield . .	5,000.00	—	—	—	—	—	5,000.00
W. Stockbridge . .	594.07	—	—	—	—	—	582.09
West Tisbury . .	366.92	—	—	—	—	—	378.46
Vestborough . . .	1,762.81	—	—	—	—	—	1,892.55
Vestfield	5,000.00	—	—	—	—	—	5,000.00
Vestford	2,442.46	—	—	—	—	—	2,071.03
Vesthampton . . .	172.93	—	—	—	—	—	170.78
Vestminster . . .	584.29	—	—	—	—	—	635.99
Veston	3,494.66	—	—	—	—	—	3,656.38

* Lead sold

Cities and Towns	1928					1929	
	Required Expenditure	Total Net Expenditure	Private Work	Reimbursement	Tools Supplied	Total Amount Received from State	Required Expenditure
Westport . .	2,712.62	—	—	—	—	—	2,705.41
Westwood . .	1,671.13	—	—	—	—	—	1,716.81
Weymouth . .	5,000.00	—	—	—	—	—	5,000.00
Whateley . .	638.20	—	—	—	—	—	638.31
Whitman . .	3,729.78	—	—	—	—	—	3,786.48
Wilbraham . .	1,616.38	—	—	—	—	—	1,538.26
Williamsburg . .	841.61	—	—	—	—	—	776.31
Williamstown . .	3,126.96	—	—	—	—	—	3,157.37
Wilmington . .	1,277.65	—	—	—	—	—	1,602.03
Winchendon . .	3,295.34	—	—	—	—	—	2,840.01
Winchester . .	5,000.00	—	—	—	—	—	5,000.00
Windsor . .	202.69	—	—	—	—	—	205.89
Winthrop . .	5,000.00	—	—	—	—	—	5,000.00
Woburn . .	5,000.00	—	—	—	—	—	5,000.00
Worcester . .	5,000.00	—	—	—	—	—	5,000.00
Worthington . .	268.48	—	—	—	—	—	283.36
Wrentham . .	1,276.22	—	—	—	—	—	1,420.40
Yarmouth . .	1,291.56	—	—	—	—	—	1,857.84